

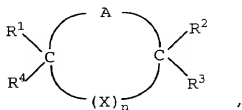
WHAT IS CLAIMED IS:

1. An electrochemical cell having a controlled electrode surface, comprising:

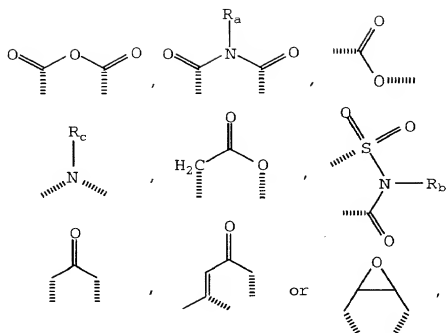
- a first electrode and a second electrode wherein at least one of the first and second electrodes has a carbonaceous surface;

- an electrolyte containing at least one solvent;

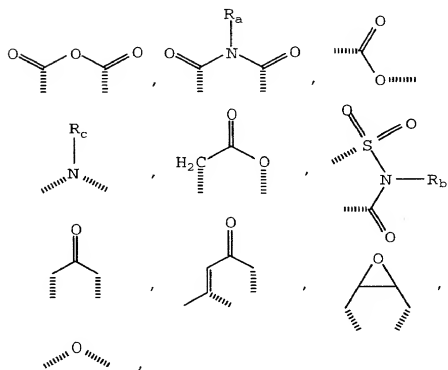
- an additive associated with the carbonaceous surface of at least one of the first and second electrodes, wherein the additive comprises a compound having a molecular weight of not less than 105 and represented by the formula:



- wherein A is a group represented by:



- wherein X is a group represented by the formula:



or linear or branched alkyl group containing 1 to 12 carbons,

- wherein n is 0, 1, 2, or 3; and

- wherein R_a , R_b , R_c , R^1 , R^2 , R^3 and R^4 are independently hydrogen or a linear or branched alkyl group containing 1 to 12 carbons.

2. The electrochemical cell according to claim 1, further comprising means associated with the additive for substantially precluding gas formation within the electrochemical cell as a result of decomposition of the additive during cell cycling and storage.

3. The electrochemical cell according to claim 1, further comprising means for increasing first cycle coulombic efficiency of the electrochemical cell relative to an electrochemical cell without the additive.

4. The electrochemical cell according to claim 3, wherein the efficiency increasing means comprises the additive.

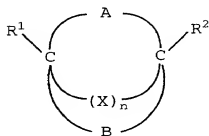
5. The electrochemical cell according to claim 1, wherein the additive is substantially soluble in the solvent of the electrolyte at ambient temperature.

6. The electrochemical cell according to claim 1, wherein the additive is substantially insoluble in the solvent of the electrolyte at ambient temperature.

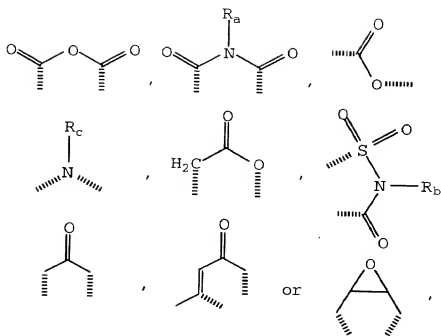
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7. An electrochemical cell having a controlled electrode surface, comprising:

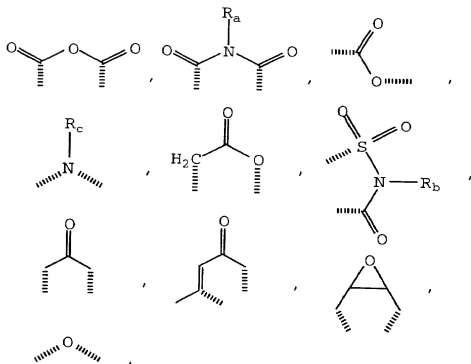
- a first electrode and a second electrode wherein at least one of the first and second electrodes has a carbonaceous surface;
- an electrolyte containing at least one solvent;
- an additive associated with the carbonaceous surface of at least one of the first and second electrodes, wherein the additive comprises a compound having a molecular weight of not less than 105 and represented by the formula:



- wherein A is a group represented by:

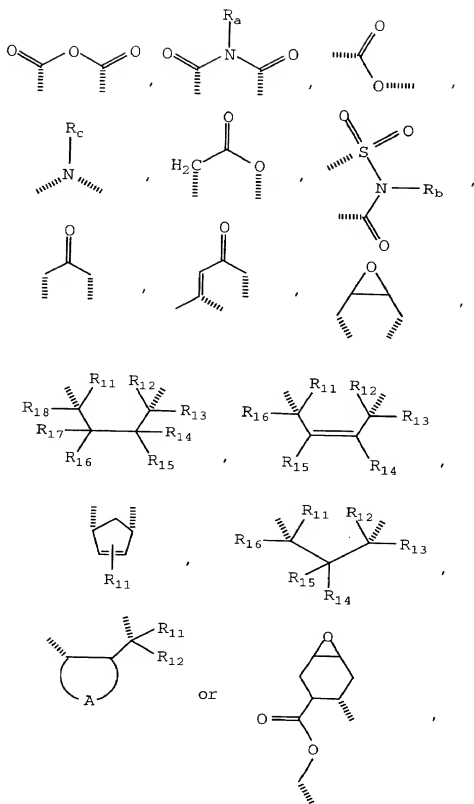


- wherein X is a group represented by the formula:



- or a linear or branched alkyl group containing 1 to 12 carbons,
- wherein n is 0, 1, 2, or 3; and
 - wherein B is a group represented by:

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- wherein $\text{R}^1, \text{R}^2, \text{R}^a, \text{R}^b, \text{R}^c, \text{R}^{11}, \text{R}^{12}, \text{R}^{13}, \text{R}^{14}, \text{R}^{15}, \text{R}^{16}$,

R¹⁷ and R¹⁸ are independently hydrogen or a linear or branched alkyl group containing 1 to 12 carbons.

8. The electrochemical cell according to claim 7, further comprising means associated with the additive for substantially precluding gas formation within the electrochemical cell as a result of decomposition of the additive during cell cycling and storage.

9. The electrochemical cell according to claim 7, further comprising means for increasing first cycle coulombic efficiency of the electrochemical cell relative to an electrochemical cell without the additive.

10. The electrochemical cell according to claim 9, wherein the efficiency increasing means comprises the additive.

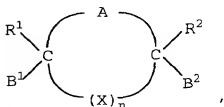
11. The electrochemical cell according to claim 7, wherein the additive is substantially soluble in the solvent of the electrolyte at ambient temperature.

12. The electrochemical cell according to claim 7, wherein the additive is substantially insoluble in the solvent of the electrolyte at ambient temperature.

13. An electrochemical cell having a controlled electrode surface, comprising:

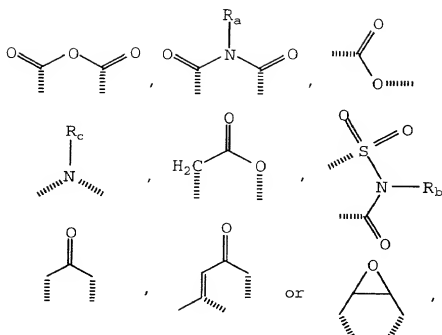
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- a first electrode and a second electrode wherein at least one of the first and second electrodes has a carbonaceous surface;
- an electrolyte containing at least one solvent;
- an additive associated with the carbonaceous surface of at least one of the first and second electrodes, wherein the additive comprises a compound having a molecular weight of not less than 105 and represented by the formula:

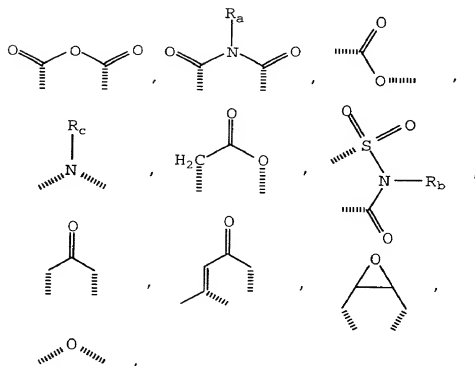


- wherein A is a group represented by:

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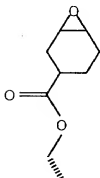


wherein X is a group represented by the formula:



or a linear or branched alkyl group containing 1 to 12 carbons,

- wherein n is 0, 1, 2, or 3;
- wherein B¹ and B² are independently hydrogen, a linear or branched alkyl group containing 1 to 12 carbons or a group represented by:



- wherein R, R¹, R², R_a, R_b, and R_c are independently hydrogen or a linear or branched alkyl group containing 1 to 12 carbons.

14. The electrochemical cell according to claim 13, further comprising means associated with the additive for substantially precluding gas formation within the electrochemical cell as a result of decomposition of the additive during cell cycling and storage.

15. The electrochemical cell according to claim 13, further comprising means for increasing first cycle coulombic efficiency of the electrochemical cell relative to an electrochemical cell without the additive.

16. The electrochemical cell according to claim 15, wherein the efficiency increasing means comprises the additive.

17. The electrochemical cell according to claim 13, wherein the additive is substantially soluble in the solvent of the electrolyte at ambient temperature.

18. The electrochemical cell according to claim 13, wherein the additive is substantially insoluble in the solvent of the electrolyte at ambient temperature.

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